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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WONG, LESLIE

ART UNIT

PAPER NUMBER

2177

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/747,515

Applicant(s)

ARNING ET AL.

Examiner

Leslie Wong

Art Unit

2177

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2000.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 55-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because they fail to show necessary textual labels of features or symbols in elements 300 and 369 in Fig. 3, elements 600, 700, 800 in Figs. 6-8, all elements in Figs. 9A and 9B, elements 1000, 1100, 1200, 1400, 1500, 1600 in Figs. 10-12, and 14-16 as described in the specification. For example, placing a label, "logical structure of a multi-dimensional database", with element 300 of Fig. 3 would give the viewer necessary detail to fully understand this element at a glance. A descriptive textual label for each numbered element in these figures would be needed to better understand these figures without substantial analysis of the detailed specification. Any structural detail that is of sufficient importance to be described should be labeled in the drawing. Optionally, the applicant may wish to include a table next to the present figure to fulfill this requirement. See 37 CFR 1.83. 37 CFR 1.84(n)(o), recited below:

"(n) Symbols. Graphical drawing symbols may be used for conventional elements when appropriate. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. Known devices should be illustrated by symbols which have a universally recognized conventional meaning and are generally accepted in the art. Other symbols which are not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable.

(o) Legends. Suitable descriptive legends may be used, or may be required by the Examiner, where necessary for understanding of the drawing, subject to approval by the Office. They should contain as few words as possible."

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 55-57, 61-63, and 67-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ma et al.** (U.S. Patent 6,078,741) in view of **Agrawal et al.** [1] (U.S. Patent 5,647,058).

Regarding claims 55, 57, 61, 63, 67, and 69, **Ma et al.** teaches a method, an apparatus and an article of manufacture of accessing a subject multi-dimensional database stored on a data store connected to a computer, comprising:

- a). receiving an indication of a number of features to be identified (Fig. 3; col. 5, lines 10-15);
- b). performing feature identification to identify the indicated number of features (Fig. 3; col. 5, lines 10-15); and

**Ma et al.** does not teach a step wherein creating an index for the subject multi-dimensional database using the identified number of features.

However, **Agrawal et al. [1]** teaches a step wherein creating an index for the subject multi-dimensional database using the identified number of features (abstract, col. 4, lines 1-34).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the feature of creating an index based on k-dimensional points as taught by **Agrawal et al. [1]** because this would increase the system performing, reduce the number of false positives produced (col. 5, lines 6-26), and achieve efficient and complete retrieval from a database or high-dimensionality points (col. 3, lines 65-67).

Regarding claims 56, 62, and 68, **Agrawal et al. [1]** further teaches a step wherein the index comprises a multi-dimensional database that is derived from the subject multi-dimensional database (col. 5, lines 47-67).

4. Claims 58, 59, 64, 65, 70, and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ma et al.** (U.S. Patent 6,078,741) in view of **Agrawal et al.** [1] (U.S. Patent 5,647,058) as applied to claims 55, 61, and 67 in further view of **Kothuri et al.** (U.S. Patent 6,381,605).

Regarding claims 58, 64, and 70, **Ma et al.** and **Agrawal et al.** [1] in combination do not teach a step wherein feature identification comprises generating an ordered list of multi-dimensional points.

However, **Kothuri et al.** teaches a step wherein generating an ordered list of multi-dimensional points (col. 10, lines 35-41)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the feature of generating an ordered list of multi-dimensional points to build index as taught by **Kothuri et al.** as this would allow all desired data to be retrieve in a single query and it is more efficient than invoking multiple queries against uni-dimensional indexes (col. 10, lines 30-34).

Regarding claims 59, 65, and 71, **Kothuri et al.** further teaches a step wherein further comprising creating the index using the list of multi-dimensional points (col. 10, lines 35-41).

5. Claims 60, 66, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ma et al.** (U.S. Patent 6,078,741) in view of **Agrawal et al. [1]** (U.S. Patent 5,647,058) as applied to claims 55, 61, and 67 in further view of **Agrawal et al. [2]** (U.S. Patent 6,094,651).

Regarding claims 60, 66, and 72, **Ma et al.** and **Agrawal et al. [1]** in combination do not teach a step wherein the index stores deviation values for each of the identified number of features.

However, **Agrawal et al. [2]** teaches a step for locating data anomalies in a K dimensional data cube (Fig. 6; col. 2, line 38 - col. 3, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the feature of exploring the performance data for finding regions of anomalies in the data as taught by **Agrawal et al. [2]** in order to identify problem areas and/or new opportunities (col. 1, lines 34-36)

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**Chen et al.** (U.S. Patent 5,727,199) teaches database mining using multi-predicate classifiers.

**Shiomi** (U.S. Patent 6,219,665) teaches retrieval menu creation device, a retrieval menu creation method, and a recording medium that stores a retrieval menu creation program.

**Tortolani et al.** (U.S. Patent 6,317,750) teaches method and apparatus for accessing multidimensional data.

**Weissman et al.** (U.S. Patent 6,212,524) teaches method and apparatus for creating and populating a datamart.

**Malloy** (U.S. Patent 6,205,447) teaches relational database management of multi-dimensional data.

**Malloy et al.** (U.S. Patent 5,978,796) teaches accessing multi-dimensional data by mapping dense data blocks to rows in a relational database.



**Zand et al.** (U.S. Patent 5,418,898) teaches multidimensional data display system and method.

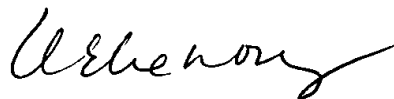
**Koss** (U.S. Patent 5,231,577) teaches method and system for processing formatting information in a spreadsheet.

**Pouschine et al.** (U.S. Patent 5,918,232) teaches multidimensional domain modeling method and system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Wong whose telephone number is (703) 305-3018. The examiner can normally be reached on Monday to Friday 6:30am - 3:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on (703) 305-9790. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.



Leslie Wong  
Patent Examiner  
Art Unit 2177

lw  
May 22, 2002



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